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AUTHOR Chang, Gen Ling; Wells, Gordon
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ABSTRACT

Noting that collaboration can enhance children's ability to solve problems of increasing difficulty, this paper discusses the theory of collaborative talk in the classroom and how it can be applied. The first section of the paper introduces the notion of collaborative talk by describing a classroom setting and offering an excerpt of two children working on a project and planning together. The second section explains more fully the role of talk in active learning and how it facilitates cognitive development and independent learning. The third section looks at collaborative talk as enabling and empowering children's learning, and exhorts teachers to help students without overpowering their efforts, while the fourth section discusses the characteristics of collaborative talk, including achieving a shared understanding of a task, and offering opinions and alternatives. The fifth section illustrates how collaborative talk works in one classroom by offering excerpts of talk from a third and fourth grade classroom. This section points out specifically where the teacher clarifies the conversation without dominating it. A final section discusses the attainment of literate thinking through talk, and notes the connections between literate talk and literate reading and writing. (Twenty-nine references are included.) (JC)

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THE LITERATE POTENTIAL OF COLLABORATIVE TALK

Gen Ling Chang and Gordon Wells
Ontario Institute for Studies in Education

ED288222

It is just after recess on Thursday, 19 February '987.[1] The place a combined third and fourth grade classroom in an inner city school in Toronto. Outside, althougn the sun is shining in a cloudless sky, the temperature is -15 degrees Celsius. Inside, too, it is the arctic climate that is the focus of attention as the children engage in the exploration of self- hosen topics arising from the school-wide theme of 'The Enchantment of Winter'.

The project had started for these children with a reading of Robert Service's poem 'The Cremation of Sam McGee'. No , three days later, almost all of them have chosen their projects, most of them arising from the brain-storming session which followed the reading of the poem. After the initial macabre fascination with Sam's mode of cremation, it is the Yukon itself - its vast size and harsh climate - which has captured the children's imagination and most of the projects have a natural history flavour. Susan and three friends, for example, are making a study of polar bears; one of them, Siew Tin, is making a stuffed model bear; Nathan and two other boys are finding out about wolves; Kim Tay and two friends have started with an interest in maps and are constructing board games involving questions about Canadian geography; Paolo is working alone on astronomy - an interest sparked by an initial question about the Yukon climate

Two of the children, Joao and Eric, started by deciding to study the terrain and after reading in a book about three dimensional mapping techniques, they have decided to make a model of Dawson City and its surroundings using a photograph as a starting point. In the following extract, they are sitting on the floor with some of the necessary materials around them, preparing to begin the construction

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1 Joao: Eric, look! See, here is going to be the small mountain.
2       We're going to build it up how it is in the book.
3       Where's the book? (he picks it up to show it to Eric)
4       You know, building it up and everything.
5 Eric: Yes
```

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6 Joao: Here it is, see. It says `Building it up'.
7 Eric: No, it doesn't mean -
8 Joao: So the small one then the big one (referring to the already
9 cut pieces of cardboard).
10 We can make a little river and the town on the edge too.
11 Eric: Yes, that's what I mean.
12 Joao: Yeh, OK.
13 Eric: That's what we were talking about.
14 Joao: Yes, we're starting.
15 Eric: And we can do little boats because of the little trees.
16 Joao: Yes, OK. So we have to glue this (the cardboard).
17 Eric: And these are the *****
18 Joao: Yes. No, we're not going to put a church.
19 Eric: I know I know.
20 Joao: No, we're not going to do any of that, OK?
21 We are going to plan it how we planned it in the paper.
22 Eric: Yes.
23 Joao: OK, let's go.

Joao and Eric have already decided on their goal: to build a model of a particular location in the Yukon. What they still have to determine is the specific form their model is going to take and the means for achieving it. This extract forms part of the process of reaching shared understanding, which is essential if they are to engage in joint action. So, despite its limitations, it is an example of the sort of talk that we wish to concentrate on in this paper: what we shall call 'collaborative talk'. However, before going on to discuss this and other similar extracts from the recordings that we made in this classroom, we wish to explain our reasons for singling it cut for special attention from all the other kinds of talk that occur in a typical classroom.

THE ROLE OF TALK IN ACTIVE LEARNING

Let us start by stating our assumptions about learning and the role that interaction plays in learning. First, though, we must make a distinction between the learning that is involved in coming to be able to recall relatively isolated items of information and the learning that is involved in the acquisition and development of more complex conceptual structures and cognitive procedures. It is primarily with the latter type of learning that we shall be concerned, since it seems to us that to understand and make provision for this is likely to bear productively on the former, but not vice versa (Anderson, 1982; Pascual-Leone, 1980).

The learning that is essential to cognitive development, we want to argue, is most likely to occur from engaging in activities in which it is necessary to recognize and solve problems of increasing levels of difficulty. In order to tackle a problem - particularly one that has not been encountered before - it is

necessary to be able to represent it to oneself in such a way that one is able to generate and choose between alternative means to its solution and then to carry out the procedures that one has judged likely to be effective. It is important to recognize that this is not a simple, linear procedure, however, since at any stage feedback on success so far or information not originally available or seen to be relevant may call for revision of some aspect or, indeed, of the whole procedure. In our own field, this recursive nature of problem-solving has been most fully explored in relation to writing (e.g. Flower and Hayes, 1981; de Beaugrande, 1982), but there are good reasons to believe that essentially the same principles apply in any kind of problem solving and thus they are of very general applicability in thinking about the provision of opportunities for the type of learning with which we are concerned.

Not everybody will be happy with this characterization of learning as occurring in the course of conscious and deliberate problem-solving. On the one hand, in early childhood, there must be some doubt as to how far mental activity is amenable to conscious control; indeed one of the major objectives of early education is to help children to develop reflective awareness of their own mental processes (Donaldson, 1978). And on the other hand, the learning that takes place as a result of listening to a story, for example, may hardly seem to involve either problem or solution. However, insofar as reading or listening involve an active construing and interpreting of the text it does not seem entirely inappropriate to assimilate them to a problem-solving model which is clearly appropriate for the vast majority of activities in which children engage both in and out of school.

For learning of the desired kind to occur, however, it is not sufficient simply to organize a programme of activities in which problems may be encountered. First, the learner must play an active role in selecting and defining the activities, which must themselves be both challenging and motivating; second there must be appropriate support. Let us consider these two requirements in turn.

The first clearly requires that the activities chosen should make demands that are in certain respects at or near the limits of the learner's current capabilities; the demands should also be such that the learner is willing to engage with them Where individuals perform tasks of another's devising, carrying out procedures according to someone else's instructions (for example, writing a project report for which the structure and major section headings are provided by the teacher), there is little need for the application of critical intelligence in defining and planning the task or in executing it effectively. The more challenging aspects of the task have already been taken care of by the expert and so the

opportunity for the learner to develop that expertise is denied by the organization of the t itself However efficient it is in ensuring the production of acceptable outcomes, therefore, the distribution of responsibility for task performance that vests control in the instructor is not well adapted to the development of knowledge and control by the learner.

Recognition that the construction of knowledge is an active process that each individual learner must carry out for him or herself (Wittrock, 1974), on the other hand, has led to a greater emphasis being placed on what h en called 'ownership' of the activities through which learning is intended to take place. This requir , that learners be given a share in the responsibility for selecting the tasks in which they engage, for deciding on the means to be employed in carrying them out and for evaluating the outcomes. Only in this way, it is argued (Barnes, 1976), can they gain an active understanding of the principles involved and of the procedures that may be effective in achieving the desired outcome. A further, not unimportant, reason for encouraging the learner to take ownership of the task, is that it increases his or her motivation to find and carry out a means of completing it successfully.

It nevertheless remains true that in many cases the learner will not be able successfully to carry out the whole task unaided. The second requirement, therefore, is for appropriate support. This means support that is related to the particular difficulty experienced and that is made available at the time when it is encountered. The organizational difficulties that this requirement may seem likely to present are typically circumvented in the teacher-directed curriculum by breaking the activities in question into small steps and providing clear instructions on how they are to be carried out. In this way, the occurrence of difficulties is reduced to a minimum. However, as has already been argued, the consequences of such an approach are that the opportunities for active learning are also drastically reduced.

However, rather than seeing difficulties as something to be avoided, we should look at them as providing ideal opportunities for facilitative intervention. This, as we understand it, is what Vygotsky (1978) meant when he argued for engaging with the child in 'the zone of proximal development'. In contrast to Piaget (at least in his early work), Vygotsky saw the development of higher cognitive functions as originating in inter-personal interaction, through which the learner appropriates the knowledge and expertise which is made available in the support provided. In the words of his best-known formulation: 'what the child can do today with help, tomorrow he will be able to do alone'.

What Vygotsky meant by this rather cryptic remark is spelt out in more detail by Wertsch:

> When children come to a point in an activity that proves too difficult for them, they turn to an adult for help. The activity is then carried out on the interpsychological plane. The future development of the child with regard to this activity consists of gradual transference of links in the activity's functional system from the interpsychological to the intrapsychological (i.e. from the social to the individual plane. The activity then becomes an interpsychological function, since the child is capable of directing his/her own attention to the elements in the environment that are necessary for carrying out the task. (1981: p.30)

This, of course, is not a complete explanation. Exactly how the 'transference' takes place still has to be spelled out and, as Bereiter (n.d.) points out, we are still very far from having a satisfactory account. The crux of the problem is that, to learn from a model or demonstration, the learner must have at least a partial understanding of the structure to be acquired in order to be able to recognize its manifestation in the proffered model. Nevertheless, whilst we may not be able to explain how learning takes place, there is little doubt that the availability of relevant models at the moment when they are needed has an important part to play. Equally important is the help that a collaborative interlocutor can provide in enabling the learner to marshall and exploit the resources he or she already has available, but over which he or she does not yet have explicit and conscious control (Karmiloff-Smith, 1979).

The major role of interaction in learning, therefore, is that it provides the chief means through which the teacher can enable students to learn from engaging in activities that pose problems to be solved. We shall now go on to argue that, in this context, collaborative talk optimally meets the requirements just discussed.

ENABLING AND EMPOWERING LEARNING

So what is collaborative talk? Conceived quite generally, collaborative talk is talk that enables one or more of the participants to achieve a goal as effectively as possible. This may, as in the opening example, be a goal involving action, such as making a model or buying the right number of rolls of wallpaper to paper a room. On the other hand, the goal may be much more abstract, such as understanding a scientific principle or planning a piece of research. Or it may involve the interplay between thought and language that occurs in writing, as, for example, in the composition of a paper to be delivered at a conference. The occasions for collaborative talk may thus be very diverse But what they all have in common is that, at some level of specificity, one of the participants has a goal that he or she wishes to achieve and the other participant engages in talk that helps the first to achieve that goal.

In most cases, the participants in collaborative talk are of approximately equal status, each able to take either of the roles of principal actor or facilitator and to benefit accordingly. Typically, too, the purposes of the collaboration are achieved when the task is completed or, at least, when the principal actor(s) is able to continue with the next step. The talk has then served its instrumental purpose and, in the light of the effectiveness of this outcome, can be judged to have been more or less successful. This was the case in the extract from the two boys' discussion quoted above, just as it was in the collaborative talk that preceded and accompanied the preparation of this paper And the potential value of such enabling peer collaboration should not be under-estimated.

However, the benefits of collaborative talk need not be limited to the function of facilitating achievement of the task. Where one of the participants has greater expertise than the other, he or she can engage in interaction with the learner with the deliberate intention of enabling the learner to acquire some procedure, knowledge or skill that will be useful in other situations beyond that in which he or she is currently engaged. In these cases, collaborative talk not only facilitates the task, it also empowers the learner. Indeed, we do not think it would be too strong a claim to say that, under ideal conditions, it has the potential for promoting learning that exceeds that of almost any other type of talk. It is the ideal mode for the transaction of the learning-teaching relationship.

For collaborative talk to have this empowering effect, however, it must meet two essential conditions. The first of these has already been addressed: it must be based on the assumption that the learner has ownership of the task and the teacher must strive to ensure that this ownership is respected. In practice, of course, ownership is a matter of degree, for the learner may not yet have sufficient confidence to take full responsibility for every aspect of the task or the necessary executive procedures for planning and carrying it out. A major objective of such talk,therefore, will be to help the learner develop conscious and deliberate control over his or her mental processes, not only in order to complete the task in hand, but also so that he or she becomes progressively more able to take responsibility for his or her own learning more generally (Bereiter and Scardamalia, in press).

The second essential condition arises from the first: the expert's contributions to the dialogue should be contingently responsive to the needs of the learner, as these needs are understood in the light of the immediate situation as well as of the longer term goals of education.

To date, there has been little mention of this important characteristic of interaction in discussions of

teacher-student talk, although its importance is clearly recognized in studies of much younger children. Schaffer (1977), for example, considers the contingent responsiveness of caretaker's interactive behaviour to be essential for the infant's earliest social and intellectual development. In studies of language acquisition, too, the same quality has been found to characterize the conversational style of parents whose children are accelerated language learners (Cross, 1978; Wells, 1985). The content of adult-child conversation changes, of course, as the child increases in competence and experience, but the learning process is continuous, as are the conditions that facilitate it. At every stage, the same conversations which provide the basis for the child's acquisition of the language system also simultaneously provide evidence about the way in which the community makes sense of experience and about how the resources of language can be used for thinking and communicating. Therefore, since there is no reason to believe that there is any radical change at the age of school entry in the basic strategies that the child uses to learn from the evidence provided in such conversations, there is equally no reason to believe that contingent responsiveness ceases to be important as a feature of adult contributions that facilitates the learning process.

Whether in incidental learning situations in the home or in the more deliberate situations that teachers arrange in the classroom, the principles that should guide the adult's participation in collaborative talk are essentially the same. Adapted from Wells (1986), they can be stated as follows:

- Take the child's attempt seriously and treat it as evidence of his or her best effort to solve the problem unaided;
- Listen carefully to the child's account and request amplification and clarification as necessary to ensure that you have correctly understood;
- In making your response, take the child's account as a starting point and extend or develop it or encourage the child to do so him or herself;
- Select and formulate your contribution in the light of the child's current manifested ability as well as of your pedagogical intentions, and modify it, as necessary, in the light of feedback provided by the child.

Put much more succintly, these principles can be summed up in the injunction to 'lead from behind'. What is important is that it is an understanding of the learner's conception of his or her task and of the way to set about it that provides the basis for the teacher's decision as to how best to help the child to progress from where he or she is now towards the more mature understanding that the adult already possesses.

When the requirement for contingent responsiveness is met, therefore, collaborative talk can fulfil its empowering function. Not only the learner is empowered, however; so also is the teacher. For it is precisely through frequently engaging in collaborative talk that the teacher is able to increase his or her understanding of children's thinking in general, and it is only by engaging in such talk with a particular learner while he or she is engaged on a specific task that the teacher can become knowledgable about that learner's purposes and current state of understanding, and thus able to make his or her contributions contingently responsive to the learner's needs.

THE CHARACTERISTICS OF COLLABORATIVE TALK

So far we have looked at collaborative talk in very general terms, considering the contexts in which it is likely to flourish and the conditions that must be met if it is to empower learning. Now we wish to examine the nature of collaborative talk more closely in order to identify those of its characteristics that promote the sort of reflective and systematic thinking on which such learning depends.

In order to achieve the benefits of having two minds focusing collaboratively on a problem, the participants must achieve intersubjectivity in their representation of the task in hand and of their proposals for dealing with it. Each needs to know the other's understanding and intentions, and both must take the appropriate steps to ensure that mutual understanding is maintained. There is a need, therefore, to be explicit. In order to explain the matter in hand sufficiently clearly for the other participant to make an informed response, each is forced to construct a more coherent and detailed verbal formulation than would be necessary if he or she were working on the problem alone. In the process, gaps and inconsistencies become apparent and can be repaired, with the result that the problem is seen with greater clarity.

However, it is not only the adequacy or inadequacy of the offered information that is revealed in these circumstances, but also the connections that are made between the parts. In developing the account, the role of cause and effect relationships, of inferences, generalizations, extrapolations, and so on, is also made apparent, as are also failures to make such connections. In sum, the need for mutual understanding in collaborative talk requires each participant to make his or her meaning clear to the other, and hence also to him or herself, with the result that thinking is made explicit and, thus, available for inspection and, if necessary, for extension, modification or correction.

Then, having achieved a shared understanding of the task, participants can now, from their different

perspectives, offer opinions and alternative suggestions. Once again, there is a need for explicitness. But more importantly, opinions and suggestions need to be justified and supported by relevant arguments and reasons need to be given why one alternative is more appropriate than another, if decisions are to have a principled basis. As a result, participants in collaborative talk can not only learn from each other's differing knowledge bases, they can also learn the need for disciplined thinking and develop some of the strategies for achieving it.

Depending on the stage reached by the principal actor in the execution of his or her task, the collaborative talk may focus on any one or more of the following components: specifying the goal more precisely, planning the means for achieving it, generating and choosing between alternatives, reviewing achievement to date, or modifying what has been done.

CHOICES AND CONNECTIONS: COLLABORATIVE TALK IN ONE CLASSROOM

In the first part of this paper, we have been concerned to give an idealized account of collaborative talk and to justify our claim for its preeminence as a mode of teacher-learner interaction. However, we want to acknowledge immediately that the ideal conditions that we have assumed in the theoretical discussion are rarely encountered in reality. In the first place, the sheer number of children who need to be supported and the constraints imposed by the organization of the school day mean that many interactions are cut short or interrupted. Secondly, since most of the children work in small groups rather than individually, there are issues of group collaboration to be addressed as well as the substantive issues raised by the tasks themselves. Thirdly, there are limits to the resources of personal knowledge as well as of books, materials and equipment that the teacher can draw on immediately in meeting the needs of particular children as they arise spontaneously in the course of the day. For all these reasons, the ideal can rarely, if ever, be achieved.

In turning to an examination of examples taken from one particular classroom, therefore, we wish to make it clear that our purpose is not to evaluate, but rather to explore the potential of collaborative talk as it is conducted in practice. To do this we shall focus our discussion of the extracts on the following four questions:

- In what ways is the talk collaborative?
- What aspects of the task are addressed in the participants' talk?
- What aspects of learning are being enabled in the talk?

• How are the participants contingently responsive to each other?

'So you've changed your topic'

As already mentioned, throughout the two weeks during which observations were made, the whole school was working on the theme of winter. In the mornings, the children worked in their home classroom and the afternoons they spent on a rotating basis with other teachers, exploring the same theme in a variety of modalities. On the second day, the whole school visited a local conservation centre and the last day included a carnaval quebecois organized by the French teacher. The results of all these activities were presented to parents at an Open House on the Thursday evening of the following week. Apart from attendance at the parents' evening, the observations were confined to the mornings, and the extracts that we want to discuss were recorded on videotape on the third, ninth and tenth days.

On the first of these occasions, some of the children were still selecting their projects and the teacher's purpose was to help them get started. So, during the last part of the morning, she spent forty-five minutes talking with individuals or small groups about their plans. One of these interactions was with Joao and Eric, who were introduced at the beginning of this paper. At this point they had not yet begun to construct their model. As she joined them, the two boys in their enthusiasm both started speaking at once:[2]

1 Joao: <We're> doing a model
2 T: Wow
3 Eric: I know what the model's going to be
(Joao and Eric both talk at once for 6 secs as they describe their intentions so neither can be heard)
4 T: Hold it! I hear that you're making a model . I hear something
5 about houses . What's this going to be about? What's your topic?
6 Joao: Yukon
7 Eric: Yukon
8 T: You're making-
(Joao and Eric again speak together making the next few lines difficult to understand)
9 Joao: In the Yukon they have shops . I saw it in the *
10 Eric: You can make- you can make igloos
11 Joao: They say they have shops ** and it has a big mountain beside it
12 Eric: (to Richard, who has come to look) and we can do the other side **

[2] In this and the later extracts, the significance of the conventions of transcription is as follows: < > = transcription uncertain; * = unintelligible word; _____ (underlining) = portions of utterances spoken simultaneously.

13 T: So you're going to do a little town?
14 Joao: (nods)
15 T: Wow!
16 Joao: And we could make a big mountain and <put those things> on top
17 T: Uh-huh uh-huh
18 Joao: And then it would be covered with snow
19 T: Uh-huh
20 Joao: And then um- we could make a little shop here and park
21 T: What questions are you answering particularly?
22 Joao: Um- ... Like `Where did they get the name from?' So we wanted- we wanted to do the model
23 T: So you- you've changed your topic a little bit
24 So you're making a model of the Yukon . showing a town?
25 Joao: Yeh
26 T: And some of the things you've learned about what it's like
27 to live in the Yukon is that it?
(During the next few turns Eric is trying to secure T's attention by calling her name. He has been left out of the preceding discussion)
28 Joao: But the mountain is small for the size of the town .
29 like the mountain *-
30 T: Which town is this? Is it a particular town? D'you know
31 the name of it?
32 Joao: It's the Yukon
33 T: That's the name- that's the name of the big territory
34 Can you find the name of a town?
35 Eric: We don't know
(T hands book to Joao and talks to Sandra briefly while Joao and Eric consult the book)
36 T: (turning back to boys) OK . This is a map that shows
37 very few towns
38 There's one
39 Joao: I know . Whitehorse
40 Eric: Whitehorse
41 T: Whitehorse . That's a famous . town in the Yukon
42 Uh-huh . Whitehorse
43 Joao: Is Alaska there too?
44 T: Pardon?
45 Joao: Alaska Alaska (pointing to two occurrences of the name on map)
46 T: This is the Alaska Highway- the Alaskan Highway
47 Joao: It's very complicated because it says United States and
48 then the United- it's over there see
49 T: Yeh
50 Joao: The United States and then United States
51 Eric: **
52 T: OK Why might it be like that? Do you understand why?
53 Joao: Maybe . it's the <shore's down that *> too?
54 T: Yeh Alaska belongs to the United States
55 Seth: (who is on the edge of the group also looking at a map) I found it I found it
56 T: You did?
57 Eric: (looking at book)It says Yukon- Yukon's three things and
58 ** you can find- you can look through every page . that

59 has the Yukon in it
60 One of them might be a photograph of a town
61 T: That's true that's true

The first point to note is the teacher's 'active listening'. indicated in the opening lines by her Wow!' and 'I hear that you're making a model', etc. By echoing what the boys have said, she is assuring them that she has heard and is interested. She is also letting them know what she takes to be the salient points in what she has heard and indirectly inviting them to consider whether these are the points that they too judge to be the most important. At the same time, the particular phrasing of 4-5, 'I hear something about houses', suggests that there is some problem about comprehensibility - a problem to which the solution might range from being more informative or explicit to speaking one at a time.

The teacher's first turn ends with a question about the issue that underlies their decision to make a model: 'What's this going to be about? What's your topic?' (5). However, although their first replies seem to provide some sort of answer, it is clear from what follows (9-20) that they have not really understood the purpose of her question. For the two boys continue to elaborate on the details of the model they want to make rather than considering the question to which their model is addressed. In spite of this the teacher continues to listen and echo back to the (e.g. 'So you're going to do a little town' (13))

But interspersed with her expressions of support, she continues to address the problem of articulating a statement of enquiry by posing questions that might elicit the issue the boys are investigating: 'What questions are you answering particularly?' (24) and 'So you're making a model of the Yukon . showing a town? And some of the things you've learned about what it's like to live in the Yukon, is that it?' (26-7). This last question, it will be noted, also acts as a model of the sort of question which the boys' intention to construct a model could appropriately address.

By juxtaposing these two kinds of response, the teacher is making a critical distinction for the children between the action goal of making a model and the topic goal, that is to say the question that is directing their enquiry. This is clearly an important distinction for them to understand, for it is only when the two goals are brought into interaction with each other that an enquiry can be productive. Moreover, it is a distinction that is too often overlooked in discussions of goal-setting with students, although it has begun to figure in recent research on writing (Freedman, 1985).

That it is the need for an articulation of a statement of enquiry rather than a concern that they

should stick to a previously agreed topic is corroborated by the teacher's ready acceptance of the change that has taken place: 'So you you've changed your topic a little' (23). At the same time, this observation also emphasizes the teacher's recognition of the boys' ownership of the task and her willingness to accept their decision to change their topic. In so doing, she also demonstrates another important feature of planning: that the setting and revising of goals and sub-goals is an on-going and recursive process as the various components interact with each other.

In fact, the following talk (24-61) exemplifies the revision of planning in operation, as the agreement that the model will be of a single town rather than of the whole of the Yukon Territory leads to a scaling down of the original intention and to the search for a specific town to be the subject of the model With the help of the book provided by the teacher, Eric comes up with a strategy for solving the problem (58-60), and it is by using a photograph of Dawson City that they are able to form the specific plan that is being discussed in the extract with which this paper opened.

'I think he got a point'

During the next week, the model progressed apace and, by the time we meet Joao and Eric again, they are reaching the final stages.

1 Joao: We're going to- we're going to cover it with white tissue paper, Eric
2 Eric: <That's what we've got to do>
3 That's for when they have snow . and after . by mistake it
4 could avalanche on here (pointing to the base of the mountain
5 on the model) and some houses will be crushed
6 T: I wonder if that's a danger here (pointing to the equivalent place on the photograph)
7 I think you're quite right about some mountains
8 Joao: I thought it was summer (meaning in the photograph)
9 Eric: Yeh but in winter- but if it's in winter ..
10 Joao: Yeh . yeh the seasons could change
11 T: That's true
12 And they don't move their houses here .. do they?
13 Eric: ** Yeh they can't like lift it and go `ow ow' (miming
14 lifting a very heavy weight) unless they just go `da da da
15 da' (said in a sing-song voice, which seems to represent the use of magic)
(all laugh)
16 T: I don't think they're going to do that ..
17 Well if you have a look here (pointing to photo in book) ..
18 See where the houses are . along the river . and then .
19 What does this look like?
20 Joao: That's a mountain
21 T: Part of the mountain
22 Eric: (pointing to model) These are one of these mountains

23 T: Uh-huh uh-huh
24 You know you don't have to have the same number of houses
25 in here as in the photograph (pointing to book)
26 Eric: I know
27 Joao: Yeh but some of- like one or two over here would be OK
(pointing to base of mountain on model)
28 Eric: Yeh but if we put one or two over next to the houses . we
29 won't have room for the tissue paper
30 Here almost squashed even
31 T: Right . sounds like this is something you boys have to talk
32 about a little more
33 You both have good points
34 Joao: Yeh I think he- he got a point because . if we put tissue
35 paper over it . that-
36 T: Is that what you plan to do with these houses?
37 Eric: Yeh
38 Joao: And then we could put like . little- put it like little
39 streets coming through here
40 T: Uh-huh . Interesting
41 Eric: Yeh we could like er . if you still want to make the thing,
42 right? we could make- you could put pine trees all around there
43 Joao: Around the mountains
44 T: Very good
45 Joao: OK Let's go

As is evident in this and the earlier extract, collaborative talk emphasizes both the personal and the social aspects of learning. The social is made important because successful completion of the task depends on the combined efforts and expertise of both participants; the personal because each collaborator has his own resources, ideas and approaches to the task. But most importantly, the commitment to collaborate obliges the participants to recognise the relevance of each other's expertise and, where necessary, to realign their own knowledge systems. It is this balancing of the social and the personal that enables learning to occur.

From a superficial reading of these transcripts, it might appear that, of the pair, it is Joao who plays the dominant role of 'knower/doer' and that Eric is the 'helper'. However, a closer examination of their talk, particularly the extract currently under consideration, makes it evident that each has his ideas about the task of making a model of Dawson City. It is not surprising, therefore, that their differing perspectives should come into conflict when, as in this extract, they have to reach a practical decision on how to proceed. However, it is not their differences that are noteworthy. Rather, it is the way in which collaboration on the task to which they have committed themselves both brings out each child's differing abilities and makes it possible for each to enable the other's learning in the joint thinking and doing that the task demands. As the teacher commented on reading the above extract, 'These two boys

have a fascinating style of working through their (mis)conceptions with a lot of talk that appears confusing on the surface but on reflection their logic is evident.'

The nub of the problem is that Joao wants their model to be an accurate representation of the scene in the photograph, while Eric is more concerned with achieving internal consistency within the model itself. The problem is brought into focus by the question as to whether they should add more houses to the model. Joao wishes to site some more at the foot of the mountain. But, following through the implications of Joao's plan to use tissue paper to represent snow on top of the mountains, Eric argues that, if an avalanche were to occur, houses placed at the foot of the mountain would be crushed (3-5). Although Joao accepts this objection, he does not abandon his plan for, a moment later, he again suggests adding more houses at the foot of the mountain (27). This time Eric counters with the objection that if the houses were too tightly packed together, there would not be room for the tissue paper that they intended to put on the roof of each house (28-30) and to this practical (i.e. constructional) objection Joao agrees and concedes that Eric has 'got a point' (34). They could, however, represent streets going between the houses (38-9) and, in place of the houses at the foot of the mountain, Eric suggests, they could put pine trees (42). With this agreed, the practical Joao calls for a resumption of activities: 'OK Let's go'.

To this interaction, it is interesting to note, the teacher contributes very little by way of suggestion or new information. It is as if, as she herself put it in a subsequent discussion, her presence is sufficient to enable the two boys to listen to each other's perspectives and take account of the arguments behind them. And this is the impression one gains from examining her role in the discussion. She listens to what each of the boys has to say and, in her responses, implicitly accepts the validity of both points of view. 'I wonder if that (i.e. an avalanche) is a danger here', she says to Eric (6), pointing to the foot of the mountain in the photograph - the spot that is in dispute as the site for additional houses on the model. But Joao's wish to achieve an accurate representation of the photograph is also recognized when she tells them that they don't have to have the same number of houses in the model as in the photograph (24-5). 'You both have good points' (33).

In this respect, her most interesting contribution to the discussion is line 12. Perhaps sensing that Joao has not fully appreciated the implications of Eric's argument, the teacher jokingly points out that people in the Dawson City shown in the photograph do not move their houses with the changing

seasons and, therefore, by implication, that even if their model depicts a summer scene, they should take account of such a hypothetical winter catastrophe by not siting houses in a position from which they would have to be removed if they were to change their model to represent the same scene in winter. It is not possible to tell from the ensuing remarks whether the two boys took in the full significance of this one utterance, the force of which depends on the initial 'and' which makes connection with Joao's preceding concession that the seasons could change, and the 'here' which contrasts the city in the photograph with the boys' representation of it in the model. The point we are making, however, is not that this utterance succeeded in convincing Joao, but rather that it illustrates very clearly the teacher's concern both to make her contributions contingently responsive to each of their perspectives and, at the same time, to encourage them to follow through to a logical conclusion the incompatibility of their implications. As she says a moment later, 'Sounds like this is something you boys have to talk about a little more' (31-2).

'Miss, it's here, my wind finder'

While Joao and Eric were beginning to discover something about the relationship between topography, climate and the location of human habitations, Marilda was finding out about the sun's effect in producing convection currents in the air to give rise to wind. Like Joao and Eric, her interest in this topic had been triggered by reading. In her case, it had been a book suggesting simple experiments to carry out. Following the directions, she had made a weather vane by stapling a rectangle of stiff paper, 3 inches by 2 inches, to one end of a drinking straw and fixing the straw to the eraser on the end of a pencil with a needle so that the straw pivoted around the needle. The straw itself rested on a wooden bead, which functioned as a washer to ensure that the straw swung freely. With her friend, Jacinta, she had taken her wind finder, as she called it, into the playground to test it and in the classroom the two of them had also simulated the wind by blowing at it. She now takes her wind finder to show it to the teacher.

1 Mari: Miss * (trying to attract T's attention for 10 seconds)
2 It's here my wind finder
3 T: OK so here's your wind finder
4 That's a good name for it isn't it?
(Marilda blows wind finder)
5 Eric, have you seen this wind finder?
6 Eric: Yes last year we were studying about it
7 T: Uh-huh
8 (to Marilda) Can you explain- can you explain how it works?
9 Seth: (who is passing) Yes I know how it works

10 Eric: ***
11 T: Oh I- I- excuse me Eric I was really- I was really talking
12 to Marilda
13 (to Rosa) Maybe you'd be interested in this
14 Do you want to come over here?
(Several other children have gathered round, including Jacinta and Maggie)
15 Mari: When you- when the wind blows- It's trying to find the wind
16 When the wind blows this points to which direction it's
17 coming from (pointing to the pointer on her wind finder)
18 Jaci: Yeah like- * (takes the wind finder and blows at it
19 causing the pointer to point at herself. She has done this several times before with Marilda)
20 Mari: See it points round to you
21 T: Why's it pointing to you? (referring to Jacinta, but addressing the question to the whole group)
22 Eric: Cos she's the one who blew . and if you keep um-
(Maggie tries blowing)
23 Jaci: You have to blow hard
(Maggie blows hard)
24 Mari: OK now blow again
(Maggie blows again)
25 Mari: It stays in the same spot cos- cos the wind's-
26 T: Why?
27 Jaci: Cos it needs a big surface to blow on . to push it
28 T: Come on (encouraging Marilda to continue)
29 Mari: Cos the- cos the wind's blowing that direction and it-
30 Cas: No . why did it go?
31 Mari: it's not coming in a different way
32 Eric: Because it doesn't have a piece of paper over here (pointing to the pointer end)
33 Jaci: **
34 T: What would happen if you had a piece of paper over there?
35 Mari: It'd turn around?
36 Jaci: Because it needs a big surface to blow on to push it .
37 T: So it's-
38 Eric: And that's a big surface
39 T: So it's got something to do with the surface of the paper?
40 Chrn: Yeah
41 T: And the air?
42 Eric: Mm
43 Mari: And the- this thing . maybe (pointing to the bead, which acts as a washer)
44 T: Oh and-
45 Eric: It's the needle
46 Jaci: <No I think it's got to turn->
47 Eric: It's the needle it's the needle that- well not the needle
48 but the . the straw . it's the straw has the hole
49 Mari: This makes it
50 Eric: The straw has the hole and the hole like causes it to . to
51 make a wiggly turn
52 T: Yes (somewhat doubtfully)
53 Eric: **
54 Mari: No it's this that makes it-
55 T: Which? The bead?

56 Mari: Yeah
57 T: The bead. you think the bead is very important?
58 Mari: Yeah
59 T: Why? Why do you think that's important?
60 Jaci: Let's try it without the bead
61 Mari: Cos the-
62 T: That's a good idea . that- that would . be a way of finding
63 out if it's really important
64 First why do you think the bead's important?
65 Mari: Well .. some machines they have a-
66 Eric: It's a nuisance
67 Mari: the little round things
68 Eric: Yes but some machines don't have them
69 T: Ballbearings? You mean ballbearings
70 Mari: Yeah . so maybe like it might make it- might help by
71 spinning it . like spinning
72 T: It's got something to do with the spinning and then making
73 it easier to spin
74 I like your idea Jacinta . that's a very interesting idea
75 taking the bead out
76 I don't know whether Marilda would . want to do that now
77 or not
78 Cas: Want to
79 Mari: OK I'll try it (she and Jacinta go away to try the experiment)

Marilda is clearly delighted with her construction and seizes every opportunity to demonstrate it to others. She is also intrigued by its operation. It is entirely natural, therefore, that she should choose to share her achievement with her teacher, rather as a writer shares his or her first draft with a sympathetic reader. 'See, it's here my wind finder', she says. And looking at the construction, the teacher not only shares her pleasure, but also expresses her genuine interest by asking her, 'Can you explain how it works?' (8)

To have to explain what one knows to another person is an excellent way of discovering just how well-founded that knowledge is. For, in order to present the matter clearly so that the other can understand it, one has to identify the key elements and make the relationships between them explicit. Sometimes this process leads to an increase in one's own understanding, as connections are consciously made and attended to that had previously been glossed over in one's own private thinking. Equally often, one finds that there are parts that had seemed clear that are not well understood at all.

The problem that confronts Marilda is thus somewhat different from the one faced by Joao and Eric. In their case, the building of the model is a way of representing what they know - although they add to and modify that knowledge in the process. In Marilda's case, it is the already completed construction that instigates the search for knowledge in order that she may understand how it works. Her problem

is to find an explanation. By taking the presence of Eric and then other children as an opportunity to invite her to tell how her wind finder works, the teacher adds momentum to her search.

For Marilda, the request is timely. She has already made a number of observations which enable her to answer the teacher's question with a descriptive generalisation: 'When the wind blows this points to which way it's coming from' (16-17), the accuracy of which is borne out when Jacinta acts as the wind. 'See, it points round to you' (20), says Marilda, with satisfaction. But this only raises another and more difficult question: Why does the wind finder point to the person who is blowing? (21). Juxtaposed in this way, these two utterances bring into sharp focus the distinction between noticing and being able to tell how something works and understanding and being able to expiain the principles that underlie its operation. It is the latter which is critical in provoking the hypothesis generating, that is the central feature of this episode of collaborative talk.

During the next few minutes, the question is taken up by most of the children in the group, with Jacinta and Eric taking the lead. Their answers, although incomplete, show that these two children have recognised that the explanation is to be found in the unequal surface areas on either side of the pivot: 'Cos it needs a big surface to blow on . to push it' (Jacinta (27)) and 'Because it doesn't have a piece of paper over here' (Eric (32), pointing to the end of the straw with no paper attached). Marilda's own contribution, split over several turns, remains close to the level of direct observation: 'It stays in the same spot cos the wind's- (25) cos the wind's blowing that direction and it- (29)it's not coming in a different way' (31). But this is certainly relevant to the solution.

The children are not merely competing to give the most acceptable answer, however - even though there is a considerable amount of overlap in turns. They are clearly also listening to each other and building on each other's contributions. This is most obvious in Eric's addition to Jacinta's statement:

```
Jacinta: Because it needs a big surface to blow on to push it
Eric     And that's a big surface (pointing to paper)
```

In addition, they are also attempting to provide justifications for their suggested explanations

Nor is it only those who seem closest to grasping the explanatory principle who are able to advance their own understanding by making connections in this way. Having had her attention directed to the structure of the weather vane by the other two children and by the teacher's summary in lines 39 and 41, it is Marilda who introduces the possibility that the bead, too, has a facilitating function in enabling the straw to spin freely: 'And the- this thing . maybe' (43) 'No, it's this that makes it-' (54) 'So

maybe like it might make it- might help by spinning it' (70-71). Spurred on by each other, all three children have become involved in the enquiry, and are attempting to extrapolate from their observations to possible principles of operation. Jacinta's suggestion that they should put Marilda's hypothesis to an empirical test is the obvious next step and the interaction ends with the two friends going off to carry out the experiment.

In discussing this extract, little mention has been made so far of the teacher's role. But it is clearly important. For it is her questions and periodical summarising of what has been said that helps the exploration to progress in so focussed a manner. This is not to suggest that the children might not have asked the questions of their own accord and perhaps also come up with similar answers. Nevertheless, the fact that the discussion proceeds as fruitfully as it does owes much to her timely interventions. But perhaps the most important quality that she brings to the interaction is the obvious interest she shows in the wind finder and how it works. Her authenticity in these circumstances is precisely in being like the children, wanting to understand, and recognising that there is still so much to question and wonder about. As she commented later, 'I so often learn with the children'.

'OK, let's follow it through'

If the teacher was Marilda's first audience, the parents' evening a week later would provide an audience of a different kind. For them and for other visitors to the classroom it would be more appropriate to write her explanation of the wind finder and how it worked. Later in the morning, at the teacher's suggestion, she sat down to this task and, when she had finished, she showed her what she had written.

Mari: (reading) 'The Wind Finder. This is how you should use it. First you go outside and hold it up. Then you- then the part that doesn't have the paper and only has the staple on the end of the straw . that part points to the direction that the wind's coming from.'

```
 1 T:    (picks up wind finder) OK let's follow it through and see if
 2       it makes sense
 3       I'm going to pretend I don't know anything about this OK?
 4 Mari: (reads) `The Wind Finder. This is how you should use it.
 5       First you hold- go outside and hold it- hold up the ..'
 6 T:    You said `it up' You've just left that word out
 7 Mari: `First you- this is how you should hold- use it. First you
 8       go outside and hold it- (she picks up pencil and makes a
 9       correction to the text) - it up. Then the part that doesn't have
10       the paper and only has a staple at the end of the straw . that
11       part points to the direction that the wind's coming from'
```

12 T: OK Let me try
13 Now I'll pretend I'm blowing and I'm the wind . all right?
14 (T blows) So you said that the part that doesn't have the
15 cardboard that only has the staple points to the direction that
16 the wind is coming from (looking at it intently for 3 seconds)
17 Mm-hmm . that seems to work doesn't it
18 Mari: (nods)
19 T: So your directions seem- seem quite interesting ..
20 Now . can you think of a way of displaying this?

Just as adult writers, in undertaking a writing task, need to define the rhetorical situation in terms of their purpose and intended audience, so Marilda writes her description of the wind finder according to her teacher's suggested audience and purpose: 'maybe you can think about a way of setting that up with some writing and some signs so that if somebody walked in the room and they saw your wind finder they could use it and learn something about air and wind'. However, in carrying out the task, she reduces it to a general description of the wind finder. Nevertheless, the suggestion to Marilda to make a written presentation of what she knows about the wind finder, after having explained it orally, as well as her uptake of the suggestion, have significant advantages.

First, the overt advantage of the suggestion is that it demonstrates the communicative and social purposes that writing serves. Second, the sense of ownership and meaningfulness experienced by Marilda in constructing the wind finder are exploited as enabling factors for the integration of a written component into her total learning in this project. And, the third advantage is the potential benefit of having to write for other people to understand rather than simply telling them.

Collaborating with her teacher and classmates, has indeed introduced Marilda to a variety of information, skills, and approaches to a single topic - wind. The collaborative talk has provided a launching pad from which Marilda moves into reading and writing and all the related processes. The important point that is being made here is that the significant consequences of collaborative talk are inherent not only in the talk, but also in what it could and should interact with. Too often in our classrooms the doing and telling fail to incorporate connections with writing and reading. The above episode illustrates this very important potential of collaborative talk. In cases like this, it is timely and appropriate for the teacher to play a key role.

Having completed her writing, Marilda takes it to her teacher, as she did with her wind finder. The most significant feature of the text-related talk that follows is the emphasis by the teacher on the comprehensibility of the meaning constructed in Marilda's writing Indeed, the teacher's concern with

meaning rather than with its expression is illustrated when she says: 'OK let's follow it through and see if it makes sense', and later after having paraphrased Marilda's text (14-16) she comments that 'that seems to work doesn't it?'. Marilda's participation is to witness the teacher modelling one possible test of comprehensibility, for texts of this kind, which is acting out the procedure described.

Marilda's active participation is in her writing and her reading aloud. When we compare her written description with her earlier spoken description, we see that they are somewhat similar. There are oral language expressions in her text such as "First you go outside and hold it." Perhaps it is the text's similarity to the spoken form that prompts her teacher to request a second reading, accompanied by a test of comprehensibility. Whether or not this is the case, there is an opportunity here for Marilda to learn to use both the stategies of reading aloud and acting-it-out to identify the necessary adjustments that a move to written description entails. The concern with the text's sense is thereby very naturally linked to the differences between oral and written modes of production. The possible extrapolations of the differences by Marilda remain uncommented on, but they will soon be noticed if Marilda continues to utilise the role of voice as an identification strategy.

As a written sequel to the discussion in the previous extract, however, this text may appear rather disappointing. The teacher certainly seems to feel so, judging by the three second pause that precedes her comment, 'That seems to work' and her qualifying 'quite' in 'Your directions seem quite interesting'. However, we should not take this as the only evidence of the extent to which Marilda was enabled as a learner by her construction of the wind finder and the collaborative talk that ensued. The text was only the beginning. During the next few days, she found suggestions in the same science book for further experiments to carry out in order to study the wind and on parents' evening she demonstrated one of these in person. For those who visited her display when she herself was not present, she prepared the following tape recorded message and hung a written version of it above her display.

> Where does the wind come from?
>
> If you want to know where the wind comes from, use a lamp without a shade and corn starch. Only 89 cents plus tax. Use a lamp as the sun. Now for the exciting part. Turn the lamp on for three minutes. Then put a pinch of corn starch above the lamp and drop it over the lamp and it starts to rise. Then PRESTO! it disappears like that.
>
> By Marilda and Denise

Like many of the children in her class, Marilda has discovered an interest that is extending her

knowledge and challenging her to develop her thinking. She has also learned something else of equal importance. She too can be an expert with information that others want to learn

ATTAINING LITERATE THINKING THROUGH TALK

The preceding analyses of the collaboration between Joao, Eric, Marilda, Jacinta, and their friends and teacher have illustrated the potentially empowering nature of collaborative talk and highlighted the centrality of concerns such as problem solving, ownership, challenge and intersubjectivity of understanding. If we now look at the attributes of language use which are intrinsic to the enactment of these concerns - such attributes as explicitness, connectivity, justification, relevance - it will be seen that they are precisely those that are held to be particularly characteristic of written discourse (Chafe, 1985). They are also attributes of thinking processes that are considered to develop as a consequence of becoming literate (Cole and Bruner, 1971; Goody, 1977). Since, however, we are dealing here with spoken language, it seems that we should reconsider the traditional definition of literacy and, in the present context, ask 'What is literate thinking and how does it develop?'

Until quite recently, answers to these questions would almost certainly have taken for granted that the linguistic-cognitive processes of reading and writing must be centrally involved (e.g. Olson, 1977). However, as a result of further comparisons of spoken and written language, including cross-cultural studies (Scribner and Cole, 1981; Heath, 1983; Tannen, 1985), a more complex picture has begun to emerge. While it would probably still be agreed that literate thinking is most likely to occur in connection with reading and writing, it is now recognized that thinking which displays many of the same characteristics can occur in relation to oral interaction between those who are literate when the purposes of the interaction demand it (Olson and Astington, 1986). Langer (in press) cites the following example:

> When a group of people read one of the classics and then discuss the theme, motives, action and characters at a Great Books meeting, I would say they were using literate thinking skills. Further, when those people see a movie and then discuss the motives and alternative actions and resolutions, I would again say they were using literate thinking skills even though they had neither read nor written. And if the people engaged in that very same conversation about a movie but did not know how to read or write, I would still say they had engaged in literate thinking. (p.5)

If we accept this argument, then we must also accept that the process of becoming literate can potentially take place through speech as well as through engagement with written language. For it is not the mode of language use that defines literate thinking, but rather the manner in which language

is employed. Thinking is literate when it exploits the symbolic potential of language to enable the thought processes themselves to become the object of thought Under appropriate conditions this can occur in either writing or speech.

Throughout this paper, it has been assumed that the prime function of schooling is to develop effective thinking. We can now make this assumption more explicit by stating that what schools should be attempting to promote is the development of literate thinking. On a previous occasion, we argued for the preeminent role of writing in performing this function (Wells and Chang, 1986), though we would have to add that not all writing has that effect (Wells, 1987). On that occasion, we also made a plea for the recognition of a similar role for talk, whilst recognizing that it is only certain types of talk that have these literate consequences. In this paper, our aim has been to show that one type of talk that has this potential is what we have called collaborative talk. It now remains to show just how this can occur.

As an example, let us consider Marilda's attempts to explain how her wind finder works. Simple as it may seem to give such an account, it requires her to review her various experiences in making and using the mechanism in order to articulate them and, in so doing, she has to select what is salient to tell and arrange it in an appropriate order. Decisions concerning relevance and presentation thus come into play, which are certainly instances of literate behaviour. Joao and Eric provide another example when they discuss the reasons for and against locating more houses in their model of Dawson city. Like Marilda, both boys have to make their arguments explicit; they also have to make them relevant to their own position as well as to that adopted by the other.In both examples, these requirements are reduced somewhat by the physical presence of the objects referred to, but there is no doubt that they are felt and, within the children's capabilities, responded to as well.

Another important aspect of literate thinking is the recognition of the need to consider alternatives and to justify them by appeal to systematic knowledge. This is best illustrated in the collaborative talk between Joao, Eric and their teacher, when each has to extrapolate from his or her knowledge about seasonal variation in climate, topography, land relief, and so on, in order to decide whether to site more houses at the foot of the mountain. Although the discussion is brief, it illustrates how the collaboration that is necessarily involved in a task such as making a model can lead children purposefully to access their mental dictionaries of knowing and understanding and, in the process, to

become more aware of them.

Reflecting on what one has done - questioning the outcome of one's efforts - is another important feature of literate thinking. For the testing of one's assumptions of knowing and not-knowing may lead to or at least call for a realigning of or adding to one's existing knowledge systems. Although this kind of literate thinking is a common epistemic characteristic of expert performance, it is one which has to be deliberately acquired (Scardamalia and Bereiter, 1985). Encouraging children to question their own efforts is one way to help them to adopt this practice. For example, Marilda is in a small way encouraged to engage in this kind of literate thinking when her teacher suggests that she should read her written description of the wind finder aloud to assess whether it makes sense. Here she is being invited to question her meaning construction so that she can realign it if need be.

So far we have drawn attention to the literate consequences of addressing the content of the task: the need to make one's intentions and one's understanding of the topic intelligible to another and at the same time to oneself. But we should also recognise the potential benefits that derive from the goal-oriented nature of collaborative talk. The tasks in relation to which the talk occurs make demands for planning and execution, which themselves may become the subject matter of talk. It is important to emphasize, however that it is not the talking through of plans that is claimed to be advantageous in itself; rather it is when planning and similar processes are raised to the level of conscious attention so that they may be brought under intentional control that such talk warrants being described as literate.

A good example of this conscious attention to goal-setting occurs when Joao and Eric are asked to formulate the question they are addressing in the making of their model. This episode qualifies as literate, we would argue, because in responding to the request to identify their question, Joao and Eric are developing self-regulatory procedures. They are learning to adopt a "what is my question?" and "where am I going?" stance to the task they undertake.

Thinking of the kind that we have characterized as literate does not only occur, of course, when activities are carried out collaboratively. It might also have occurred if the children in this classroom had been working on their own, although it would probably have been in an attenuated form. However, because they needed to achieve intersubjectivity of understanding about their intentions, which was essential if their joint efforts were to be productive, the children were encouraged to turn

their thinking back upon itself - reflectively selecting and evaluating in order to construct an inteligible, coherent and convincing verbal formulation. It is above all because it can foster the growth of this critical reflectiveness that collaborative talk has such important potential for the development of literate thinking.

In this paper, we have only had space to consider four examples of collaborative talk, all taken from recordings made in the course of one class project. As a result, there is a danger that we have read more into what was said than the participants themselves were aware of. We must also admit that our claims about the potential benefits for the development of literate thinking that derive from engaging in collaborative talk may not have been realised in the learning that actually took place as a result of these particular interactions. On the other hand, although of limited significance when considered in isolation, the extracts which we have analysed take on a different significance when they are treated as a small but representative sample of the learning opportunities that each child enjoyed during the course of these two weeks.

However, it is with the teacher's comments that we should like to end. They are taken from a discussion that followed a viewing of that part of the recording that included the first discussion with Joao and Eric.

> That part with Joao and Eric - it's just like that business that kids need time to talk about what they're going to write about to work out their ideas, and then to do rough copies to find out what they really think, and then revise..... That really interested me. I kept seeing little parts where it's like Joao and Eric - that nudging them to make the connection between two ideas, asking them what their topic is. I mean it's the same as the writing process - having them tell you what they're doing, where they're going, what their questions are...and having them review the process and what they're doing.

Attending to the extracts that we had analysed, the teacher has clearly made a very similar interpretation, understanding and knowing for herself the significance of the talk in which she had been involved. Although she does not use the term herself, there is little doubt that what has excited her is the potential for the development of literate thinking that is to be found in collaborative talk.

Note

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